



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,575	06/12/2001	James Alexander Reeds III	037-0039	4755
52218	7590	12/30/2008		
AT&T Legal Department Attn: Patent Docketing Room 2A-207 One AT&T Way Bedminster, NJ 07921				
EXAMINER				
TRAN, ELLEN C				
ART UNIT		PAPER NUMBER		
2434				
MAIL DATE		DELIVERY MODE		
12/30/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

09/879,575

**Applicant(s)**

REEDS ET AL.

**Examiner**

ELLEN TRAN

**Art Unit**

2434

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-16, 18-22, 26-32, 41-43, 45-47 and 57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-16, 18-22, 26-32, 41-43, 45-47 and 57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***DETAILED ACTION***

1. This action is responsive to communication: filed on 17 November 2008 with acknowledgement of an original application filed 12 June 2001.
2. Claims 1-3, 5-16, 18-22, 26-32, 41-43, 45-47, and 57, are currently pending in this application. Claims 1, 14, 41, and 57 are independent claims.

***Response to Arguments***

3. In view of typographical errors on previous Office Actions the, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

This office action is a Non-Final Rejection in order to applicant sufficient opportunity to respond to the new line of rejection where Staring U.S. Patent Publication 2001/0007127 is used instead of Chang et al. U.S. Patent 6,105,012.

/Kambiz Zand/

Supervisory Patent Examiner, Art Unit 2434

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-3, 5-8, 14-16, 18-22, 26, 27, 41-43, and 45-47** are rejected under 35

U.S.C. 103(a) as being unpatentable over Medvinsky U.S. Patent Application Publication No. 2002/0094081 (hereinafter '081) in view of Jung U.S. Patent Application Publication No. 2001/0052072 (hereinafter '072).

**As to independent claim 1, “A method comprising: selecting a fixed length segment of a continuous decryption key stream based on a received session count of a received data packet”** is taught in '081 pages 3-4 paragraphs 0033-0034;  
the following is not explicitly taught in '081:

**“padding an encrypted payload of the received data packet to a given size with padding, the given size corresponding to the fixed length segment size, and decrypting the payload of the received data packet by applying a portion of the fixed length segment to the received data packet by applying the fixed length segment of the continuous decryption key to the padded, encrypted payload, a portion of the fixed length segment being applied to the encrypted payload, a remaining portion of the fixed length segment being applied to the padding”** however '072 teaches that padding is done by the encryption/decryption module as needed to perform the encryption/decryption operations on page 3, paragraph 0035. Applying padding would be applicable in the decryption and encryption process. Also note the RTP protocol implements padding when specified in transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention a method encryption/decryption utilizing stream ciphers over the Internet taught in '081 to include a means to incorporate the padding into the encryption and decryption module. One of ordinary skill in the art would have been motivated to perform such a modification because there is a requirement of stream encryption algorithms is that the transmitting side and the receiving side be synchronized see '072 (pages 1, paragraphs 0013). "A requirement of stream encryption algorithms is that the transmitting side and the receiving side be synchronized in order for the encryption and decryption to work properly. Specifically, the data must be decrypted in the same order or sequence in which it was encrypted. However, such synchronization is not only difficult to employ and maintain in the IP network 10, but can also consume a significant amount of bandwidth (e.g., 7-10% using RTP)".

**As to dependent claim 2, "wherein the applying comprises performing a bit per bit streaming encryption process"** is disclosed in '081 page 3, paragraph 0034.

**As to dependent claim 3, "wherein the applying further comprises performing an exclusive OR operation with the portion of the fixed length segment and the data packet"** is taught in '081 page 3, paragraph 0034.

**As to dependent claim 4, "wherein the applying further comprises performing an RC4 operation with the portion of the fixed length segment and the data packet"** is shown in '081 page 3, paragraph 0034.

**As to dependent claim 5, "further comprising: receiving the data packet, the data packet comprising at least a portion of the received session count"** is shown in '081 page 2, paragraphs 0017-0018.

**As to dependent claim 6, “wherein the data packet further comprise at least a portion of a received message digest value”** is disclosed in ‘081 page 4, paragraph 0054.

**As to dependent claim 7 “wherein the selecting comprises: selecting a current fixed length segment if a difference between the received session count and a locally generated session count is less than a threshold value”** is shown in ‘081 page 4, paragraphs 0036-0051.

**As to dependent claim 8, “wherein the selecting further comprises: extracting the at least a portion of the received session count from the encrypted data packet; expanding the at least a portion of the received session count to the received session count; and comparing the received session count to the locally generated session count”** is disclosed in ‘081 pages 3-4 paragraphs 0033-0034.

**As to independent claim 14, “A method of generating an encrypted data packet, the method comprising: selecting a fixed length segment of a continuous encryption key stream”** is taught in ‘081 pages 3-4 paragraphs 0033-0034;

**“generating a session count based in accordance with the fixed length segment; and combining the encrypted payload and the at least a portion of the session count to form an encrypted data packet”** is shown in ‘081 page 2, paragraphs 0017-0018; the following is not explicitly taught in ‘081:

**“padding data to generate padded data” and “applying the fixed length segment to the padded data to form padded encrypted data by applying a portion of the fix length segment to the data to form an encrypted payload and applying a remaining portion of the fixed length segment to the padding; de-padding the padded encrypted data to form the encrypted payload”** however ‘072 teaches that padding is done by the encryption/decryption

module as needed to perform the encryption/decryption operations on page 3, paragraph 0035. Applying padding would be applicable in the decryption and encryption process. Also note the RTP protocol implements padding when specified in transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention a method encryption/decryption utilizing stream ciphers over the Internet taught in '081 to include a means to incorporate the padding into the encryption and decryption module. One of ordinary skill in the art would have been motivated to perform such a modification because there is a requirement of stream encryption algorithms is that the transmitting side and the receiving side be synchronized see '072 (pages 1, paragraphs 0013). "A requirement of stream encryption algorithms is that the transmitting side and the receiving side be synchronized in order for the encryption and decryption to work properly. Specifically, the data must be decrypted in the same order or sequence in which it was encrypted. However, such synchronization is not only difficult to employ and maintain in the IP network 10, but can also consume a significant amount of bandwidth (e.g., 7-10% using RTP)".

**As to dependent claims 15 and 16**, these claims contain substantially similar subject matter as claims 2 and 3; therefore they are rejected along the same rationale.

**As to dependent claim 18, "further comprising: generating a message digest value; and combining at least a portion of the message digest value with the encrypted payload to form the encrypted data packet"** is taught in '081 page 4, paragraphs 0054–0055.

**As to dependent claim 19, "wherein the generating comprises: generating the message digest value based on the encrypted payload, the session count and a message digest key"** is shown in '081 page 4, paragraphs 0054–0055.

**As to dependent claim 20, “further comprising: forming the at least a portion of the message digest value by truncating the message digest value”** is disclosed in ‘081 page 4, paragraphs 0054–0055.

**As to dependent claim 21, “further comprising transmitting the encrypted data packet to a receiver through a communication channel”** is taught in ‘081 page 2, paragraph 0016.

**As to dependent claim 22, “further comprising: receiving a received data packet corresponding to the encrypted data packet, the received data packet comprising the encrypted payload, at least a portion of a received session count and a received truncated message digest value; selecting a fixed length segment of a continuous decryption key stream based on a received session count of a data packet; and decrypting a payload of the data packet by applying a portion of the fixed length segment to the data packet”** is shown in ‘081 pages 3-4 paragraphs 0033-0034 and page 4, paragraphs 0053-0055.

**As to dependent claims 26 and 27**, these claims contain substantially similar subject matter as claims 2-8; therefore they are rejected along the same rationale.

**As to independent claim 41**, this claim is directed to a transmitter of the method of claim 14; therefore it is rejected along similar rationale.

**As to dependent claims 42, 43, and 45-47**, these claims contain substantially similar subject matter as claims 2, 3, and 5-8; therefore they are rejected along the same rationale.

6. **Claims 9-13, and 28-32**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Medvinsky U.S. Patent Application Publication No. 2002/0094081 (hereinafter ‘081) in view of



Jung U.S. Patent Application Publication No. 2001/0052072 (hereinafter '072) in further view of Staring U.S. Patent Publication 2001/0007127 (hereinafter '127).

**As to dependent claim 9, “further comprising: discarding the data packet if the difference is not less than the threshold value”** however '127 teaches “The key check block is sent to the receiver as a header of the current encrypted data payload. The receiver also retains the last eight bytes of the current packet, it decrypted the first eight bytes (the key check block) and compares the result to the retained last eight bytes ... If there is no match, an error occurred and the receiver takes appropriate action” on page 5, paragraph 0052.

It would have been obvious to one of ordinary skill in the art at the time of the invention a method key selection for decryption taught in '081 and '072 to include a means to compare the keys being used and take appropriate action (i.e. delete packet) when a match is not found. One of ordinary skill in the art would have been motivated to perform such a modification because of the need to protect data during transmission see '127 (page 1, paragraphs 0005-0006). “It is known to remedy this deficiency by decrypting the data field of the packet with the current session key, as well as the next key in the sequence of keys, and choose the key for which the decrypted data makes sense. Using this method, the change-over from one session key to the next is automatically detected. However, to determine whether the decrypted data makes sense requires knowledge about the information being transmitted. This is not always the case, limiting the use of this method. It is an object of the invention to provide a secure communication system, sink device and secure communication method which overcome above mentioned drawback”.

**As to dependent claim 10, “further comprising: re-synchronizing a decryption key to an encryption key by setting the decryption key and the encryption key to a start vector if the difference in not less than the threshold value”** is taught in ‘081 page 4, paragraphs 0041- 0053 “it signals the CODEC change to gateway controller 106. MTA 104 generates a new set of RTP key stream and a new initial time stamp. Herein lies a first advantage of the present invention. The related art provides for re-derivation of the RTP key stream when a CODEC change occurs, by providing the following key derivation function ... “End-End RTP Key Change <N>” is a label that is used as a parameter to the key derivation function”.

**As to dependent claim 11, “further comprising: discarding the data packet if the at least a portion of the received message digest value does not match a locally generated message digest value”** is taught in ‘127 page 5, paragraph 0052-0053.

**As to dependent claim 12, “further comprising: re-synchronizing the decryption key to an encryption key by setting the decryption key and the encryption key to a start vector if the at least a portion of the received message digest value does not match the locally generated message digest value”** is shown in ‘081 page 4, paragraph 4-5, paragraphs 0054-0057 “In a further embodiment, the above solution is employed for a MAC (Message Authentication Code) algorithm change, resulting in a packet size change. Traditionally, for convenience the same RC4 key stream may be used in the generation of the keying material needed to calculate a MAC for each packet (a MAC is appended after the encrypted text). Where the MAC pad is key used to generate the MAC, for one-time use only. So, wehre a key stream is used for MAC generation (instead of or in addition to encryption) and the size of that

random pad changes, one must rekey and start a new RC4 key stream in the same way as from CODE changes”.

**As to dependent claim 13, “further comprising: extracting the at least a portion of the received message digest value from the data packet; generating the locally generated message digest value based on the at least a portion of the received session count, a received encrypted payload of the data packet and a message digest key; truncating the locally generated message digest value to form a truncated message digest; and comparing the truncated message digest to the at least a portion of the received message digest value”** is shown in ‘081 page 4, paragraph 4-5, paragraphs 0054-0057.

**As to dependent claims 28-32**, these claims contain substantially similar subject matter as claims 9-13; therefore they are rejected along the same rationale.

7. **Claim 57**, is rejected under 35 U.S.C. 103(a) as being unpatentable over Medvinsky U.S. Patent Application Publication No. 2002/0094081 (hereinafter ‘081) in view of Sengodan et al. U.S. Patent 6,918,034 (hereinafter ‘034).

**As to dependent claim 57, “A receiver comprising: a session count evaluator configured to determine if a difference between a received session count within a received encrypted data packet and a locally generated session count is less than a threshold”** is taught in ‘081 pages 3-4 paragraphs 0033-0034;

**“a decryption engine configured to decrypt a payload of the received encrypted data packet by applying a portion of a current fixed length segment of a continuous decryption key stream to the data packet if the difference is less than the threshold”** is shown in ‘081 page 2, paragraphs 0017-0018

the following is not explicitly taught in '081: **“a padding engine operable to pad an encrypted payload of the received encrypted data packet to generate the payload of the received encrypted data received by the decryption engine;” “and a pad remover configured to remove padding from the decrypted data”** however '034 teaches that padding is added to packets so that each packet is a predetermined block size in col. 4, lines 30-36.

It would have been obvious to one of ordinary skill in the art at the time of the invention a method encryption/decryption utilizing stream ciphers over the Internet taught in '081 to include a means add padding to the exchanged packets. One of ordinary skill in the art would have been motivated to perform such a modification because there is a need to introduce padding at the packet level see '034 (col. 3, line 65 through col. 4, line 29). “Currently, there exist mechanisms for providing encryption at the IP level and at the RTP level. These mechanisms have taken into account the fact that block encryption schemes require the input to be an integral multiple of the block size. This has been made possible by suitable padding schemes. However, in an environment where several mini-packets are multiplexed into a RTP packet, no suitable encryption (and corresponding padding) mechanism has been proposed ... It can be seen then that there is a need to provide padding and encryption on a mini-packet basis. It can also be seen that there is a need for a mechanism to perform padding and encryption at the mini-packet level. It can also be seen then that there is a need for a mechanism to perform authentication at the mini-packet level. To overcome the limitations in the prior art described above, and to overcome other limitations that will become apparent upon reading and understanding the present specification, the present invention discloses a method and apparatus to provide encryption and authentication of a mini-packet in a multiplexed real time protocol (RTP) payload. The present

invention solves the above-described problems by providing a mechanism to perform padding, encryption and authentication at the mini-packet level”.

### ***Conclusion***

8. It is noted, PATENTS ARE RELEVANT AS PRIOR ART FOR ALL THEY CONTAIN “The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain.” In re Heck, 699 F.2d 1331, 1332-33, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments (see MPEP 2123).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen C Tran whose telephone number is (571) 272-3842. The examiner can normally be reached from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Zand can be reached on (571) 272-3811. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ELLEN TRAN/  
Primary Examiner, Art Unit 2434  
22 December 2008  
/Kambiz Zand/  
Supervisory Patent Examiner, Art Unit 2434